

**ANNEX 9
CHARACTERISTICS AND METHODS OF USE OF EQUIPMENT FOR THE
PERIMETER AND PORTAL CONTINUOUS MONITORING SYSTEM**

I. Equipment

The inspecting Party shall have the right to install the equipment listed in this Section at each facility subject to continuous monitoring or monitored facility. The inspecting Party shall have the right to store such equipment that has not yet been installed and spare parts for such equipment in quantities sufficient for the continuous monitoring activities at the facility where that equipment is to be installed.

A. For the Union of Soviet Socialist Republics:

1. Monitoring Equipment for the Portal:

- (a) Television camera surveillance and measurement system mounted on three- and six-meter-high assembled sectional masts.
- (b) System of infrared and magnetometric sensors.
- (c) Traffic signal and control equipment:
 - (i) Electromechanical gate position sensors;
 - (ii) Traffic lights; and
 - (iii) Semaphore gates.
- (d) Equipment for additional lighting of the portal area:
 - (i) General purpose lights;
 - (ii) Emergency lights;
 - (iii) Floodlights for contrast illumination of vehicles;
 - (iv) Six-meter high metal poles; and
 - (v) Three- or six-meter-high sectional masts.
- (e) Other equipment:
 - (i) Fixed measuring rods;
 - (ii) Portable measuring poles;
 - (iii) Tape measures and other measuring devices;
 - (iv) Cabling; and
 - (v) Weight sensors (provided by the inspected Party).
- (f) Other equipment, as agreed by the Parties.

2. Monitoring Equipment for Road Exits:

- (a) Environmental shelter.

- (b) Equipment for monitoring each exit, to be installed in an environmental shelter:
 - (i) Local control console for independent control of traffic control devices;
 - (ii) Television monitors for the television surveillance system;
 - (iii) Connector units for linking equipment at the exit with the operations center;
 - (iv) Heating control units for infrared sensor protective glass;
 - (v) Equipment for communications with the operations center; and
 - (vi) Personal (micro)computers;
 - (c) Television camera surveillance and measurement system mounted on three- and six-meter-high sectional masts.
 - (d) System of infrared and magnetometric sensors.
 - (e) Vehicle dimension screening system:
 - (i) Vertical receiving and transmitting arrays of infrared sensors; and
 - (ii) Doppler road sensor.
 - (f) Traffic signal and control equipment:
 - (i) Electromechanical gate position sensors;
 - (ii) Dual-signal traffic lights; and
 - (iii) Semaphore gates.
 - (g) Additional lighting equipment for road exit:
 - (i) General purpose lights;
 - (ii) Emergency lights;
 - (iii) Six-meter-high metal poles; and
 - (iv) Three- and six-meter-high masts.
 - (h) Other equipment:
 - (i) Fixed measuring rods;
 - (ii) Portable measuring poles, tape measures and other measuring devices; and
 - (iii) Cabling.
 - (i) Other equipment, as agreed between the Parties.
3. Perimeter Monitoring Equipment:
- (a) Perimeter fence integrity monitoring system:
 - (i) Sensor elements;

- (ii) Section boxes;
 - (iii) Signal cables;
 - (iv) Equipment for telephone communication with the operations center; and
 - (v) Cable conduits.
- (b) Other equipment, as agreed between the Parties.
4. Operations Center Equipment:
- (a) Operations center building;
 - (b) Main control console;
 - (c) Video data receiving, switching, and digital processing equipment;
 - (d) Personal (micro)computers;
 - (e) Television monitors;
 - (f) Equipment for recording video data and information from sensors, and for recording the results of computer processing of data;
 - (g) Equipment for receiving, processing, and storing data from the perimeter fence integrity monitoring system;
 - (h) Telephone and radio communications equipment and fire alarm equipment;
 - (i) Satellite communications equipment (if provided by the inspecting Party);
 - (j) Photocopying equipment;
 - (k) Facsimile equipment;
 - (l) Equipment for the power supply system;
 - (m) Diesel generator with fuel tanks; and
 - (n) Other equipment, as agreed between the Parties.
- B. For the United States of America:
1. Equipment for use at the Portal:
- (a) Vehicle dimensional screening equipment:
 - (i) Infrared breakbeam system; and
 - (ii) Metal base (for mounting of infrared sensors).

- (b) Weight sensors (provided by the inspected Party).
 - (c) Surveillance system (some items of which will be located inside the Operations Center and Exit Shelters, as appropriate):
 - (i) Character generators and mounting racks;
 - (ii) Monochrome television cameras;
 - (iii) Interconnect cables for the television cameras;
 - (iv) Adjustable mounting head for television cameras;
 - (v) Camera towers (in sections);
 - (vi) Camera junction boxes;
 - (vii) Video distribution amplifiers and mounting racks;
 - (viii) Nine-inch (23-centimeters) television monitors and mounting racks;
 - (ix) Videocassette recorder and mounting shelf;
 - (x) Fiber-optic transmitter cards;
 - (xi) Fiber-optic cables;
 - (xii) Fiber-optic receiver cards;
 - (xiii) Exterior lighting mounting poles;
 - (xiv) High-pressure sodium lighting and supports;
 - (xv) Instrument console and panels;
 - (xvi) Video loss detectors and closure panel;
 - (xvii) Video switching devices;
 - (xviii) Data authentication devices; and
 - (xix) Video foredrop (fixed measuring rod for video imaging).
 - (d) Vehicle Sensors and Control Equipment:
 - (i) Infrared breakbeam system;
 - (ii) Induction loop-sensors;
 - (iii) Gate opening sensors;
 - (iv) Traffic signal lights;
 - (v) Semaphore gates;
 - (vi) Traffic control junction box; and
 - (vii) Metal base (for mounting of sensors, signal lights, and semaphore gates).
 - (e) Other equipment, as agreed between the Parties.
2. Equipment for use at the Road Exits, consisting of:
- (a) Vehicle dimensional screening equipment (equipment as listed in sub-paragraph I.B.1.(a) of this Annex);
 - (b) Surveillance system (equipment as listed in subparagraph I.B.1.(c) of this Annex);
 - (c) Vehicle Sensors and Control Equipment (equipment as specified in subparagraph I.B.1.(d) of this Annex);

- (d) Communications equipment, to include telephones, intercom and hand-held radios specified in subparagraph I.B.4.(v) of this Annex;
 - (e) Environmental shelter (modular, with equipment specified in paragraph I.B.4 of this Annex, as necessary, for independent monitoring of a road exit);
 - (f) Cabling, as required;
 - (g) Gate Seals;
 - (h) Data authentication devices; and
 - (i) Other equipment, as agreed between the Parties.
3. Equipment for use along the Perimeter, consisting of:
- (a) Surveillance System (equipment as listed in subparagraph I.B.1.(c) of this Annex);
 - (b) Video motion-detection equipment;
 - (c) Video switching equipment;
 - (d) Data authentication devices;
 - (e) Cabling, as required; and
 - (f) Other equipment, as agreed between the Parties.
4. Operations Center Equipment:
- (a) Programmable logic controller;
 - (b) Executive module for logic controller;
 - (c) Memory module for logic controller;
 - (d) Interface rack for logic controller;
 - (e) Output module for logic controller;
 - (f) Input module for logic controller;
 - (g) Equipment control panel;
 - (h) Printers for personal (micro)-computers;
 - (i) Personal (micro)computers;

- (j) Hard and floppy disk, and tape drives for personal (micro)computers;
- (k) Keyboards for personal (micro) computers;
- (l) Display monitors for personal (micro) computers;
- (m) Desktop scanner and interface for personal (micro) computers;
- (n) Software for personal (micro)-computers;
- (o) Hardware and software for the personal (micro)computers for recording a digitized video image to computer memory;
- (p) Videocassette recorders;
- (q) Consoles for video, traffic control, and other subsystems;
- (r) Photocopying equipment;
- (s) Environmental control equipment;
- (t) Video equipment as specified for the surveillance system;
- (u) Data authentication equipment;
- (v) Communications equipment:
 - (i) Laser facsimile equipment;
 - (ii) Telephone system, to include wiring connectors, and switching equipment;
 - (iii) Intercom system;
 - (iv) Base station radio transceiver;
 - (v) Hand-held radios;
 - (vi) Antenna for base radio station;
 - (vii) Fiber-optic cabling for connecting exit shelters and equipment at the exits to the operations center; and
 - (viii) Satellite communications equipment (if provided by the inspecting Party);
- (w) Operations center building (modular);
- (x) Power Supply Equipment:
 - (i) Back-up power generator;
 - (ii) Automatic switching equipment for generator;
 - (iii) Generator fuel storage tank;
 - (iv) Transformer for generator; and
 - (v) Distribution panel for generator;
- (y) Other equipment, as agreed between the Parties.

II. Methods of Use of Equipment

The Parties agree to use the equipment specified in Section I of this Annex as follows:

A. For the Union of Soviet Socialist Republics:

1. Equipment at the Portal:

- (a) Equipment installed at the portal shall be used to screen road and rail vehicles and exposed cargoes to determine whether they are large enough to contain or to be an item of continuous monitoring. If such vehicles and cargoes are not large enough to contain or to be an item of continuous monitoring, as determined by screening, such vehicles and cargoes shall be allowed to proceed without further inspection and without undue delay. If such vehicles and cargoes are large enough to contain or to be an item of continuous monitoring, monitors shall have the right to stop and inspect such vehicles and cargoes in accordance with the procedures provided for in Annex 5 to this Protocol.
- (b) The following equipment, which the inspecting Party may install at the portal of a facility subject to continuous monitoring or monitored facility, shall function as follows:
 - (i) The television camera surveillance and measurement system shall permit a monitor in the operations center to observe the situation at the portal, produce a continuous videotape and video snapshots of vehicles proceeding through the portal, and perform remote dimensional screening of vehicles exiting the monitored facility. Television cameras shall be mounted on three- and six-meter-high assembled sectional masts. The fixed field of view of such cameras shall be agreed by the Parties. Television cameras for remote dimensional screening of exiting vehicles shall be located no more than 50 meters from, and perpendicular to the vehicular route through the portal and no more than 30 meters from the middle of the screening area facing in the direction of traffic.
 - (ii) The system of infrared and magnetometric sensors shall be installed in the screening area on both sides of the route of traffic and used to monitor the direction of movement of vehicles, to identify vehicle locations, and to relay video snapshots of side views and front images of vehicles for the remote dimensional screening of vehicles and exposed cargoes to determine whether a vehicle or exposed cargo is large enough to contain or to be an item of continuous monitoring. Infrared sensors shall be mounted on special supports on both sides of the screening area and shall register beam interruption by exiting vehicles.

Magnetometric sensors shall be installed on one side of the screening area and shall be a back-up system that allows vehicles to be distinguished from other objects breaking the sensor beams.

- (iii) Traffic signal and control equipment consisting of electromechanical entrance and exit gate position sensors, traffic lights controlling the exit of a vehicle from the monitored facility, as well as a semaphore gate shall be used to control a vehicle in the portal area.
- (iv) The equipment for additional lighting of the portal areas shall include general purpose and emergency lights and flood lights for contrast lighting of vehicles while the side and front measurement television cameras are turned on. General purpose and emergency lights shall be mounted on six-meter-high assembled metal poles so as to ensure the lighting of the portal area. Floodlights for contrast lighting of vehicles shall be mounted on three- or six-meter-high sectional masts near the screening area along the vehicular route through the portal.
- (v) Weight sensors shall be used to weigh road vehicles in accordance with the procedures provided for in Annex 5 to this Protocol.
- (vi) Fixed measuring rods shall be used for visual evaluation of vehicle dimensions.
- (vii) Portable measuring poles, tape measures and other measuring devices shall be used for direct dimensional measurement of vehicles, covered and environmentally protected objects, containers, launch canisters, and cargoes.
- (viii) Cabling shall link equipment at the portal and the operations center.

2. Monitoring Equipment for Road Exits:

- (a) Equipment installed at each road exit shall be used to screen road vehicles and exposed cargoes to determine whether they are large enough to contain or to be an item of continuous monitoring. If such vehicles or cargoes are not large enough to contain or to be an item of continuous monitoring, as determined by screening, such vehicles and cargoes shall be allowed to proceed without undue delay. If such vehicles or cargo are large enough to contain or to be an item of continuous monitoring, monitors shall bring that to the attention of the in-country escort, and the inspected Party shall direct such vehicle or cargo to the portal of the monitored facility.

- (b) The following equipment, which the inspecting Party may install at each road exit of the facility subject to continuous monitoring or monitored facility, shall function as follows:
- (i) The television camera surveillance and measurement system shall permit a monitor in the operations center to observe the situation at the road exits and remotely screen the dimensions of exiting vehicles by means of video information from the measurement television cameras. Television cameras shall be installed on three- and six-meter-high sectional masts. Surveillance television cameras shall monitor the entrance and exit gates as well as the area of the road exit. Measurement television cameras shall be installed no more than 50 meters from, and perpendicular to the vehicle route through the road exit and no more than 30 meters from the middle of the screening area facing in the direction of traffic. The fixed field of view of such cameras shall be agreed by the Parties.
 - (ii) The system of infrared and magnetometric sensors installed on both sides of the screening area of the road exit shall be used to monitor the direction of movement of vehicles and exposed cargoes, relay video snapshots of side and frontal images of vehicles.
 - (iii) The system for monitoring the dimensions of vehicles, consists of vertical arrays of infrared transmitters and receivers located on both sides of the screening area of the road exit and of a doppler road sensor installed on the shoulder and beamed at the approaching exiting vehicle. The information from the doppler and infrared sensors is received in the operations center in order to produce a profile of the exiting vehicle or exposed cargo to determine whether the vehicle or exposed cargo is large enough to contain or to be an item of continuous monitoring.
 - (iv) The traffic signal and control equipment, consisting of electromechanical exit and entrance gate position sensors, dual-signal traffic lights and semaphore gates shall be used to control vehicles exiting the monitored facility.
 - (v) The equipment for additional lighting of the road exit control area, which includes general purpose and emergency lights and floodlights, shall ensure the operation of the television measurement cameras. Such equipment shall be mounted on six-meter-high poles and three-meter-high masts.
 - (vi) Fixed measuring rods shall be used for visual evaluation of the dimensions of exiting vehicles and exposed cargoes.

- (vii) Portable measuring poles, tape measures, and other measuring devices shall be used for direct dimensional measurement of vehicles and exposed cargoes.
- (viii) Cabling shall link equipment at the exit with the operations center.

3. Perimeter Monitoring Equipment:

- (a) Equipment may be placed by the inspecting Party along the entire perimeter of the facility subject to continuous monitoring or monitored facility. Such equipment shall be used by monitors to observe the activity along the perimeter and within the perimeter continuous monitoring area.
- (b) The following equipment, which the inspecting Party may install along the perimeter and within the perimeter continuous monitoring area of the facility subject to continuous monitoring or monitored facility, shall function as follows:
 - (i) The perimeter fence integrity monitoring system shall consist of sensor elements and section boxes mounted on the perimeter mesh fence. A sensor element shall consist of segments of special cable up to 500 meters long, laid in two parallel "threads" along the fence and connected to a section box that is mounted on fence supports.
 - (ii) The section boxes shall be connected to one another and to the operations center by a cable for signaling a possible perimeter violation and the location of the violation.
 - (iii) The section boxes shall have telephone connections to the operations center as well. Conduits for cables connecting portal equipment to equipment at the road exits, shall be fastened onto the perimeter mesh fence supports.

4. Operations Center Equipment:

- (a) The operations center for the perimeter and portal continuous monitoring system shall serve as the headquarters for the monitoring team. The operations center building shall be located at the portal within the perimeter continuous monitoring area and shall consist of five sections, three of which shall be used to house technical equipment and two shall be used as an off-duty area. The location of the building shall provide for an un-obstructed view of the portal.
- (b) The equipment located in the operations center may be used by monitors to:

- (i) Observe on television monitor screens the situation in the perimeter continuous monitoring area, at the portal, and at the road exits;
 - (ii) Operate the traffic lights and semaphore gates;
 - (iii) Check color graphic displays of measurements of dimensions of exiting vehicles and exposed cargoes obtained using infrared and television systems;
 - (iv) Remotely control the lighting of the portal areas;
 - (v) Control the perimeter fence integrity monitoring system;
 - (vi) Receive, switch, and digitally process video information from surveillance and measurement television cameras;
 - (vii) Control outside devices, monitor sensors, and determine whether a vehicle or exposed cargo is large enough to contain or to be an item of continuous monitoring;
 - (viii) Record video data, information from sensors, and computer processed information;
 - (ix) Provide telephone communications, radio communications and fire alarms; and
 - (x) Transmit, using the two dedicated telephone lines and satellite communications equipment, unencrypted monitoring-related data including video snapshots and photographs. Such information shall not be transmitted via the non-dedicated commercial telephone line.
- (c) Electrical power supply equipment shall be used to transform the voltages and the frequencies of the feeder network to supply uninterrupted power for technical systems in the event of a brief interruption in the electrical power provided by the inspected Party.
- (d) A diesel generator with fuel tanks shall be located under an awning near the operations center and shall be used as an independent electrical power supply source for technical systems in the event of a protracted interruption in the electrical power provided by the inspected Party.
- B. For the United States of America:
1. Equipment at the Portal:
 - (a) Equipment installed at the portal shall be used to screen rail vehicles, road vehicles, and exposed cargoes to determine whether they are large enough to contain or to be an item of continuous

monitoring. If such vehicles and cargoes are not large enough to contain or to be such an item of continuous monitoring, as determined by screening, such vehicles and cargoes shall be allowed to proceed without further inspection and without undue delay. If such vehicles or cargoes are large enough to contain or to be an item of continuous monitoring, monitors shall have the right to stop and inspect such vehicles and cargoes in accordance with the procedures provided for in Annex 5 to this Protocol.

- (b) The following equipment, or part of such equipment, which the inspecting Party may install at the portal of a facility subject to continuous monitoring or monitored facility, shall function as follows:
- (i) Vehicle sensors shall provide indication of an approaching vehicle to the monitors in the operations center. Such sensors may include in-road induction loop sensors, above-ground induction loop sensors, infrared breakbeams, gate opening sensors placed on gates of the facility, or other sensors.
 - (ii) Traffic control devices shall be employed to control each vehicle's passage through the portal so that it may be screened by the monitors and the equipment. Traffic control devices may include traffic lights and semaphore gates, or other devices.
 - (iii) Length screening sensors shall assist monitors in the operations center in determining whether a vehicle or exposed cargo is large enough to contain or to be an item of continuous monitoring. Such sensors may include infrared breakbeams, video cameras with video foredrops (fixed measuring rods for video imaging), or other sensors.
 - (iv) Weight sensors shall be used to weigh road vehicles in accordance with procedures provided for in Annex 5 to this Protocol.
 - (v) The surveillance system, which may include video cameras mounted on poles, shall allow the monitors to observe activities in the area of the portal from the operations center, to record video images, and to take, as necessary, video snapshots of vehicles moving through the portal. The fixed field of view of such cameras shall be agreed by the Parties.
 - (vi) Lights on poles shall provide illumination for observation of the portal area and for the video cameras.
 - (vii) Data authentication devices may be used to confirm the validity of signals relayed from cameras and sensors to the operations center.

2. Equipment at the Road Exits:

- (a) Equipment installed at each road exit shall be used to screen road vehicles and exposed cargoes to determine whether they are large enough to contain or to be an item of continuous monitoring. If such vehicles and cargoes are not large enough to contain or to be such an item of continuous monitoring as determined by screening, such vehicles or cargoes shall be allowed to proceed without undue delay. If such vehicles or cargoes are large enough to contain or to be an item of continuous monitoring, the monitors shall call this to the attention of the in-country escort and the inspected Party shall direct such vehicles or cargoes to the portal of the monitored facility.
- (b) The following equipment or part of such equipment, which the inspecting Party may install at each road exit of the facility subject to continuous monitoring or monitored facility, shall function as follows:
 - (i) Vehicle sensors shall provide indication of an approaching road vehicle to the monitors in the operations center and exit shelter. Such sensors may include in-road induction loop sensors, above-ground induction loop sensors, infrared breakbeams, gate opening sensors placed on gates of the facility, or other sensors.
 - (ii) Traffic control devices shall be employed to control the passage of each vehicle or exposed cargo through the road exit so that it may be screened by the monitors and the equipment. Traffic control devices may include traffic lights and semaphore gates, or other devices.
 - (iii) Length screening sensors shall assist monitors in the operations center and exit shelters in determining whether a vehicle or exposed cargo is large enough to contain or to be an item of continuous monitoring. Such sensors may include infrared breakbeams, video cameras with video foredrops (fixed measuring rods for visual imaging) or other sensors.
 - (iv) The surveillance system, which may include video cameras mounted on poles, shall allow the monitors to observe activities from the operations center and exit shelter, to record video images, and to take, as necessary, video snapshots of road vehicles and cargoes moving through the exit. The fixed field of view of such cameras shall be agreed by the Parties.
 - (v) Lights on poles shall provide illumination for observation of the exit area and for the video cameras.
 - (vi) Environmental shelters for monitors shall contain equipment as specified in paragraph I.B.4 of this Annex, and telephone

equipment for communications with the operations center. Such shelters shall be used to receive all data from equipment at the road exits when monitors are present at those exits.

- (vii) Gate seals may be used on the gates of a road exit when the exit is not in use. The seals shall be checked by monitors to verify that the gate was not used prior to the opening of the exit by the inspected Party.
- (viii) Data authentication devices shall be used to confirm the validity of signals from the sensors and video cameras to the operations center and exit shelter.

3. Perimeter Monitoring Equipment:

- (a) Equipment may be placed by the inspecting Party along the entire perimeter of the facility subject to continuous monitoring or monitored facility. Such equipment shall be used by monitors to observe the activity along the perimeter and within the perimeter continuous monitoring area.
- (b) The following equipment, or part of such equipment that the inspecting Party may install along the perimeter and within the perimeter continuous monitoring area of the facility subject to continuous monitoring or monitored facility, shall function as follows:
 - (i) Video cameras shall be located along the perimeter in such a way as to provide for viewing of the perimeter by monitors in the operations center. The distance between such cameras and the height of the cameras above the ground shall allow the cameras to provide for full viewing of corresponding sectors of the perimeter. Such cameras may be placed 50 meters or less apart and no more than eight meters above the ground. The fixed field of view shall be agreed to by the Parties;
 - (ii) Video switching devices located in the operations center shall be used to select sectors of the perimeter for observation by the monitors;
 - (iii) The surveillance system may include video motion detectors to signal the presence of a moving object within the field of view of a camera;
 - (iv) Lights on poles shall provide illumination along the entire perimeter and allow for viewing by video cameras during periods of darkness. Lights may be placed 50 meters or less apart and no more than eight meters above the ground;

- (v) Data authentication devices may be used to confirm the validity of the signals transmitted by the video cameras to the operations center or shelters.

4. Operations Center:

- (a) The operations center for the perimeter and portal continuous monitoring system shall serve as the headquarters for the monitoring team. The building for the operations center shall be located at the portal. The location of the building shall provide for an unobstructed view of the portal.
- (b) The equipment located in the operations center shall be used by monitors to:
 - (i) Receive, review, and authenticate data from all portal, road exit, and perimeter monitoring equipment;
 - (ii) Process data, display video images, and collect monitoring data;
 - (iii) Operate all traffic control devices and vehicle sensors when such devices and sensors are not under the control of monitors at the road exits;
 - (iv) Transmit, using the two dedicated telephone lines and satellite communications equipment unencrypted monitoring-related data including video snapshots and photographs. Such information shall not be transmitted via the non-dedicated commercial telephone line;
 - (v) Record and store video and sensor data;
 - (vi) Provide telephone communications with monitors at exit shelters, at any other buildings or structures used for inspection of vehicles or their cargoes, at the storage building, and at the monitors' living quarters; and
 - (vii) Provide two-way radio communications with monitors in the perimeter continuous monitoring area, including with monitors at the road exits.
- (c) A backup power generator shall be located near the operations center and shall be used to provide power to the perimeter and portal continuous monitoring system in the event of an interruption in the electrical power provided by the inspected Party.